

Notice of Allowability

Application No.

10/642,980

Applicant(s)

BELL, LON E.

Examiner

Anthony Fick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to applicant's amendment of 5/4/07.
2. ☒ The allowed claim(s) is/are 10-12, 16-18, 22, 23 and 27-40.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 2/2/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Remarks

1. Applicant's amendments to the claims have overcome the previous rejections under 35 U.S.C. 112 second paragraph and 35 U.S.C. 102(b) over the Stachurski reference. The rejections are therefore withdrawn.

Terminal Disclaimer

2. The terminal disclaimers filed on May 4, 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent Nos. 7,111,465 and 6,948,321 have been reviewed and are accepted. The terminal disclaimers have been recorded. The previous double patenting rejections involving U.S. 7,111,465 and 6,948,321 are withdrawn.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruce Itchkawitz on June 7, 2007 and June 15, 2007.

The application has been amended as follows:

a) Claim 37, line 1: "Claim 33" has been replaced with the following – Claim 36 –

b) Specification page 1, line 2: the following has been placed after "2002" – (now U.S. Patent No. 6,625,990) – .

c) Specification page 1, line 3: the following has been placed after "2002" – (now U.S. Patent No. 6,637,210) – .

d) Specification page 1, line 4: the following has been placed after "2001" – (now U.S. Patent No. 6,606,866) – .

Allowable Subject Matter

4. Claims 10-12, 16-18, 22, 23 and 27-40 are allowed.

5. The following is an examiner's statement of reasons for allowance: independent claims 10, 12, 16, 17, 22, 23 and 27 each describe various embodiments of the present invention for a thermoelectric power generation system and method of generating power. All the claims require a plurality of thermoelectric elements with a working media passing on the hot and cold sides of the elements. Claims 10 and 22 also require the thermoelectric elements to be configured to allow the working media to pass through them. Claims 12, 17 and 23 require the thermoelectric elements to allow convective heat transport by the working media in the direction of the hotter side of the assembly. Claims 16, 17 and 27 require thermal isolation in a direction of working media movement. The closest prior art to the claims is Stachurski (U.S. 4,125,122).

Stachurski discloses a direct energy conversion device as shown in figures 1, 2 and 4. Figure 1 shows a power generation system comprising a plurality of thermoelectric elements forming an assembly having a cooler side and a hotter side during operation, p and n elements 61, 62 and 63, wherein the working media collects

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waste heat from the colder side of at least some of the elements, stream 35, the working media further heated, heater structure 1, 2 and 3, and then dispenses a portion of its heat to the hotter side of at least some of the elements, stream 5, thereby generating power with the thermoelectric elements and at least an electrical system to transfer power from the assembly, 196 (see columns 5 and 6).

The additional requirements of the independent claims outlined above are not disclosed by Stachurski, but are within applicant's patents 7,111,465 and 6,948,321. Applicant has filed a terminal disclaimer to overcome the obvious double patenting rejections with these patents. Therefore, the patents cannot be used to reject the claims.

In regards to claims 10 and 22, passing the working media through the thermoelectric elements is not an obvious modification to the device of Stachurski. In fact as shown in figures 1, 2 and 3, Stachurski isolates the elements away from the working media by use of heat pipes, 51, 52, etc. By allowing the media to pass through the elements, heat transfer can occur via conduction through the media rather than through the elements. This increased heat transfer can reduce the temperature gradient experienced by the thermoelectric elements and reduce the efficiency of the device. Therefore it would not be obvious to make such a modification.

In regards to claims 12, 17 and 23, the isolation of thermoelectric modules within the prior art also prevents convective heat transport by the working media. For heat transport to occur to the warmer side, the working media would need to pass either through the elements or between the elements. The prior art isolates the elements by

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use of insulation between elements or non-porous elements to prevent electrical shorts between elements via a conducting liquid media, and to maintain the temperature profile by preventing heat transport through space that is not occupied by the actual thermoelectric elements. Therefore it would not be obvious to alter the prior art and include convective heat transport by the working media.

In regards to claims 16, 17 and 27, the thermal isolation required by the claims is not described within the prior art except within applicant's patents as stated above. As applicant has filed a terminal disclaimer for those patents, rejections over the patents containing the ideas of thermal isolation cannot be maintained. Therefore the claims are allowable over the prior art. The remaining claims all depend from one of the independent claims and are allowable for the same reasoning.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday - Friday 7 AM to 4 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick
AU 1753
June 8, 2007

ADF


NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700